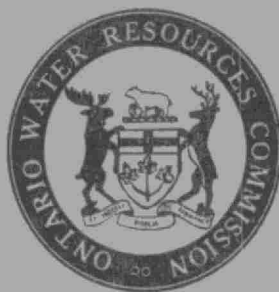


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TWELVE MILE BAY RESORT AREA

1966

TOWNSHIP OF FREEMAN

THE

ONTARIO WATER RESOURCES

COMMISSION

WATER QUALITY SURVEY

of the

TWELVE MILE BAY RESORT AREA

TOWNSHIP OF FREEMAN

1966

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Report on a water quality
survey of Twelve Mile Bay resort
area, township of Freeman,
district of Muskoka.

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REPORT

on a

WATER QUALITY SURVEY

of

TWELVE MILE BAY RESORT AREA

TOWNSHIP OF FREEMAN

District of Muskoka

January 1966

The Division of Sanitary Engineering

INDEX

	<u>PAGE NO.</u>
INTRODUCTION	1
GENERAL	1
WATER USES	2
(1) Recreational	2
(2) Water Supply	2
SANITARY WASTE DISPOSAL	2
REFUSE DISPOSAL	2
SURFACE-WATER QUALITY	3
RESULTS OF LABORATORY ANALYSES	3
DISCUSSION	3
SUMMARY AND CONCLUSIONS	4
Summary	4
Recommendations	4
APPENDICES	
EXPLANATION AND SIGNIFICANCE OF LABORATORY ANALYSES	
LABORATORY ANALYSES RESULTS - TABLE NO. I	

ONTARIO WATER RESOURCES COMMISSION

REPORT

INTRODUCTION

A water quality survey of Georgian Bay in the Twelve Mile Bay Resort Area was carried out in August, 1965. Investigations of this type are carried out routinely and upon request, and are primarily designed to determine water quality.

Potential and existing sources of pollution are noted and recommendations are made with respect to pollution abatement and prevention.

GENERAL

Twelve Mile Bay Resort Area is located in the Township of Freeman and extends approximately 9.5 miles in an easterly direction from the free waters of Georgian Bay. There are approximately 103 cottages located on the north and south banks of the bay. The cottages are intensified in an area extending from Lot 53 to Lot 41, Concessions 7, 8 and 9. These lots have been parcelled to smaller lots on both sides of the bay. An additional number of building lots estimated at 50 have recently been identified and approved for prospective expansion.

There is an Indian Reserve located on the south side of the bay in an area known locally as Isaacs Bay. There are approximately 12 families who maintain a permanent residence here.

WATER USES

(1) Recreational

The area is used predominantly for resort purposes and boating, swimming, water sports and good fishing grounds are the major attraction.

(2) Water Supply

Drinking water supply reportedly is obtained from the Twelve Mile Bay on an individual basis. No treatment generally is provided.

SANITARY WASTE DISPOSAL

Septic tanks and tile beds are reportedly the most common method of sewage disposal employed. In most instances, these units are installed without approval or final inspection. The overburden of rock and predominance of impermeable soil conditions on most lots presents difficulties in sewage disposal.

Individual disposal problems reported in this area have no doubt originated as a result of the inadequate method of control and absence of preliminary approval procedures.

REFUSE DISPOSAL

Evidence of careless disposal of refuse was noted at the time of the survey. At the area shown on the appended map, located on the south shore of the bay at Concession IV, Lot 38, refuse was strewn along the shore and debris was apparently being thrown from passing boats.

SURFACE-WATER QUALITY

Table No. 1 presents the results of the samples collected in connection with this survey. Figure No. 1 shows approximate locations of the sampling points.

RESULTS OF LABORATORY ANALYSES

All of the results of the bacteriological examinations were within the Commission objective for surface waters of not greater than 2400 coliforms per 100 ml. The results of the chemical analyses were within Commission objectives for BOD, (biochemical oxygen demand) and suspended solids concentration. The remaining chemical analyses were indicative of acceptable alkalinity, hardness, iron and chloride concentrations and pH for surface waters in the Province of Ontario.

DISCUSSION

It should be noted that these satisfactory results are based on grab samples taken and conditions noted at the time of the inspection. An appraisal of the significance of these analyses should be governed by the fact that numerous similar sampling programmes would provide more reliable results. The Commission has scheduled regular water quality investigations in the Twelve Mile Bay Area as part of an expanding sampling programme in the District of Muskoka.

Where surface waters are used for drinking supply the OWRC recommends a minimum treatment of chlorination. Although enforceable regulations concerning chlorination are only applicable to communal water distribution systems, ingestion of this untreated surface

water offers no margin of protection from isolated contamination which may occur.

SUMMARY AND CONCLUSIONS

Summary

A sampling programme to determine the water quality in the Twelve Mile Bay Resort Area was accomplished in August, 1965. The results of the laboratory analyses of samples indicated that the water was within the Commission objectives for surface waters in the Province of Ontario. Further sampling in order to establish comparative analyses is a prerequisite for a reliable water quality assessment.

Although laboratory analyses do not indicate significant pollution, this survey concludes that the following recommendations should be considered as part of a preventive pollution programme.

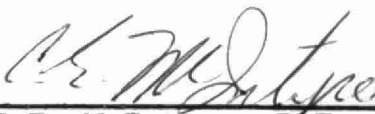
Recommendations

1. The Township of Freeman should establish an approved refuse disposal site that is easily accessible and in a location where acceptable dumping procedures and supervision can be maintained.
2. The Township of Freeman should adopt a policy where preliminary appraisal of lot suitability for private sewage disposal facilities precedes building application approval. Plans of waste disposal proposals should be submitted with structural plans and

should comply with Muskoka District Health Unit requirements.

All of which is respectfully submitted,

District Engineer


C.E. McIntyre, P.Eng.,

Approved by


J.R. Barr, Director,
Div. of Sanitary Engineering.

/elb

Prepared by: D.J. Currie,
Engineer's Assistant.

EXPLANATION AND SIGNIFICANCE OF LABORATORY ANALYSES

(A) Bacteriological Examinations

Bacteriological examinations were performed on samples from the watercourse. The Membrane Filter technique was used to obtain a direct enumeration of coliform organisms. These organisms are normal inhabitants of the intestines of man and other warm blooded animals. They are always present in sewage and are generally minimal in other pollutants. The results of the examinations are reported as MF Coliform Count per 100 ml.

The Commission objective for surface waters in Ontario is a coliform count of not greater than 2400 organisms per 100 ml.

(B) Chemical Analyses

The chemical analysis performed on stream samples included determinations for biochemical oxygen demand, (BOD) suspended solids and in some instances, turbidity.

(1) Biochemical Oxygen Demand (BOD)

Biochemical oxygen demand is reported in parts per million (ppm) and is an indication of the amount of oxygen required for stabilization of decomposable organic matter present in sewage, polluted waters, or industrial wastes. The completion of the test requires five days, under the controlled incubation temperature of 20°C.

The Commission water quality objectives for stream water - a 5-Day BOD of not greater than 4 ppm; for storm sewer, water

pollution control plant and industrial waste discharges - a 5-Day BOD of not greater than 15 ppm.

(2) Solids

The laboratory does tests to determine the total and suspended solids in a sample. The value for dissolved solids is determined by taking the mathematical difference between the total and suspended solids.

The concentration of suspended solids expressed in parts per million (ppm) is generally the most significant of the solids analyses in regard to stream water and outfall discharge qualities.

The OWRC objective for discharge is a suspended solids concentration of not greater than 15 ppm.

(3) Turbidity

Turbidity is caused by the presence of suspended matter such as clay, silt, finely divided organic matter, plankton and other microscopic organisms in water or outfall discharges. It is an expression of the optical property of a sample and the results are reported in "Silica Units".

TABLE I

<u>Sampling Point No.</u>	<u>Description</u>	<u>Date</u>	<u>5-Day BOD (ppm)</u>	<u>Total (ppm)</u>	<u>Solids Susp. (ppm)</u>	<u>Diss. (ppm)</u>	<u>Lab.No.</u>	<u>M.F. Coliform Count/100 ML</u>
TMB 0.0	Georgian Bay at Mouth of Twelve Mile Bay.	Aug.24/65					R-17881	2
TMB 0.2(S)	Twelve Mile Bay.	Aug.24/65					R-17882	0
TMB 1.0(S)	Twelve Mile Bay.	Aug.24/65					R-17883	2
TMB 2.85(S)	Twelve Mile Bay Moose Point Indian Reserve North Side.	Aug.24/65	0.6	112	2	110	R-17884	4
TMB 3.2(S)	Twelve Mile Bay Mouth of Channel Moose Point Indian Reserve.	Aug.24/65					R-17885	22
TMB 3.6(S)	Twelve Mile Bay as shown on en- closed map.	Aug.24/65					R-17886	0
TMB 3.95(S)	Twelve Mile Bay.	Aug.24/65					R-17887	14
TMB 4.4(S)	Twelve Mile Bay.	Aug.24/65					R-17888	4
TMB 4.7(S)	Twelve Mile Bay.	Aug.24/65	0.6	108	4	104	R-17889	22
TMB 5.0(S)	Twelve Mile Bay.	Aug.24/65					R-17890	68

TABLE I (CONT'D)

<u>Sampling Point No.</u>	<u>Description</u>	<u>Date</u>	<u>5-Day BOD (ppm)</u>	<u>Total (ppm)</u>	<u>Solids Susp. (ppm)</u>	<u>Diss. (ppm)</u>	<u>Lab.No.</u>	<u>M.F. Coliform Count/100 ml</u>
TMB 5.5(S)	Twelve Mile Bay.	Aug.24/65					R-17891	6
TMB 5.9(S)	Twelve Mile Bay.	Aug.24/65					R-17892	2
TMB 6.3(S)	Twelve Mile Bay.	Aug.24/65					R-17893	18
TMB 6.4(S)	Twelve Mile Bay.	Aug.24/65					R-17894	4
TMB 6.7(S)	Twelve Mile Bay.	Aug.24/65					R-17895	22
TMB 6.9(S)	Twelve Mile Bay.	Aug.24/65	0.6	108	4	104	R-17896	28
TMB 7.1(S)	Twelve Mile Bay.	Aug.24/65					R-17897	6
TMB 8.1(S)	Offshore from Refuse Disposal Area.	Aug.24/65					R-17898	6
TMB 6.9(N)	Twelve Mile Bay.	Aug.24/65					R-17899	6
TMB 6.6(N)	Twelve Mile Bay.	Aug.24/65					R-17900	16
TMB 6.3(N)	Twelve Mile Bay as shown on en- closed map.	Aug.24/65					R-17901	18
TMB 6.0(N)	Twelve Mile Bay as shown on en- closed map.	Aug.24/65	0.5	108	4	104	R-17902	22

TABLE I (CONT'D)

<u>Sampling Point No.</u>	<u>Description</u>	<u>Date</u>	<u>5-Day BOD (ppm)</u>	<u>Total (ppm)</u>	<u>Solids Susp. (ppm)</u>	<u>Diss. (ppm)</u>	<u>Lab. No.</u>	<u>M.F. Coliform Count/100 ml</u>
TMB 5.8(N)	Twelve Mile Bay as shown on en- closed map.	Aug.24/65					R-17903	48
TMB 5.6(N)	Twelve Mile Bay as shown on en- closed map.	Aug.24/65					R-17904	1,500
TMB 5.1(N)	Twelve Mile Bay as shown on en- closed map.	Aug.24/65					R-17905	56
TMB 4.6(N)	Twelve Mile Bay as shown on en- closed map.	Aug.24/65					R-17906	34
TMB 4.05(N)	Twelve Mile Bay as shown on en- closed map.	Aug.24/65					R-17907	24
TMB 3.65(N)	Twelve Mile Bay as shown on en- closed map.	Aug.24/65					R-17908	6

TABLE I (CONT'd)

ADDITIONAL ANALYSES

<u>Sampling Point No.</u>	<u>Description</u>	<u>Date</u>	<u>Hardness as CaCO₃ (ppm)</u>	<u>Alkalinity as CaCO₃ (ppm)</u>	<u>Iron as Fe (ppm)</u>	<u>Chloride as Cl (ppm)</u>	<u>pH at Lab</u>
TMB 2.85(S)	Twelve Mile Bay as shown on en- closed map.	Aug.24/65	78	60	0.02	4	8.2
TMB 6.9(S)	Twelve Mile Bay as shown on en- closed map.	Aug.24/65	78	59	tr*	5	8.3
TMB 6.0(N)	Twelve Mile Bay as shown on en- closed map.	Aug.24/65	78	59	0.02	4	8.2

* Less than 0.01 ppm.

